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| APPLICATION NO.  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.     | CONFIRMATION NO. |
|--|-------------|----------------------|-------------------------|------------------|
| 10/649,088   | 08/26/2003  | Jung-Tao Liu         | 2100.023100/J.Liu 23    | 4933             |
| 46290 7590 04/13/2007<br>WILLIAMS, MORGAN & AMERSON<br>10333 RICHMOND, SUITE 1100<br>HOUSTON, TX 77042 |             |                      | EXAMINER<br>PHAN, MAN U |                  |
|  |             |                      | ART UNIT                | PAPER NUMBER     |
|  |             |                      | 2616                    |                  |
| SHORTENED STATUTORY PERIOD OF RESPONSE   |             | MAIL DATE            | DELIVERY MODE           |                  |
| 3 MONTHS   |             | 04/13/2007           | PAPER                   |                  |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

# Office Action Summary

Application No.

10/649,088

Applicant(s)

LIU, JUNG-TAO

Examiner

Man Phan

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 26 August 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 8/26/03 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- ☐ Notice of Informal Patent Application
- ☐ Other: \_\_\_\_\_.

***DETAILED ACTION***

1. The application of Liu for the "Method of control signaling in wireless communications" filed 08/26/2003 has been examined. Claims 1-20 are pending in the application.
2. The applicant should use this period for response to thoroughly and very closely proof read and review the whole of the application for correct correlation between reference numerals in the textual portion of the Specification and Drawings along with any minor spelling errors, general typographical errors, accuracy, assurance of proper use for Trademarks <sup>TM</sup>, and other legal symbols @, where required, and clarity of meaning in the Specification, Drawings, and specifically the claims (i.e., provide proper antecedent basis for "the" and "said" within each claim). Minor typographical errors could render a Patent unenforceable and so the applicant is strongly encouraged to aid in this endeavor.

***Drawings***

3. Figures 1-2 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

*Claim Rejections - 35 USC § 103*

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koo et al. (US#7,113,496) in view of Malladi et al. (US#2003/0210668).

With respect to claims 13-14, the references disclose a novel system and method for efficiently carrying downlink control information for an enhanced uplink dedicated channel, according to the essential features of the claims. Koo discloses a method of transmitting control signals (See Abstract) in a communication network comprising: transmitting a frame downlink control signal data related to scheduling for uplink transmission of packet data over a single control channel. Koo provided a method for a UE to indicate an end of transmitting data frames in order to enable a UTRAN to assign a common packet channel to another UE in a CDMA mobile communication system. The method comprises requesting assignment of any one of common packet channels assignable in the UTRAN; assigning a common packet channel by the UTRAN in response to the request; sequentially transmitting the data frames and their associated control frames over the assigned common packet channel; and transmitting at least one control frame, in an appointed field of which a given bit pattern appointed with the UTRAN

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is registered, in order to inform the UTRAN of an end of data transmission upon completing data transmission through the data frames (See Fig. 40 and Col. 9, lines 14 plus).

However, Koo does not disclose expressly the HARQ channel ID, redundancy version, transport format, transport block size in the communication frame. In the same field of endeavor, Malladi et al. (US#2003/0210668) teaches in Fig. 2B a diagram illustrated a subframe structure for the shared control physical channel for the high-speed downlink shared channel (HS-SCCH) as defined by W-CDMA. The HS-SCCH is a fixed rate downlink physical channel used to carry downlink signaling related to the HS-DSCH transmission. In particular, the HS-SCCH carries physical layer information needed by the UE to receive and decode the packet transmitted on the associated HS-PDSCH. This information includes the following: Channelization code set (7 bits)--indicates the starting channelization code and the number of codes used for the HS-PDSCH; Modulation scheme (1 bit)--indicate whether QPSK or 16-QAM is used for the HS-PDSCH; Transport block size (6 bits)--indicates the number of data bits being transmitted in the associated subframe on the HS-DSCH; HARQ process information (3 bits); Redundancy and constellation version (3 bits); New data indicator (1 bit)--indicates whether or not a new packet is being transmitted on the HS-PDSCH. UE identity or UE ID (10 bits)--identifies the specific UE for which the packet on the HS-PDSCH is intended ([0041] plus). As shown in Fig. 2B, the transmission timeline for the HS-SCCH is also divided into subframes, with each subframe including three slots and having a duration of 2 msec. Each slot can carry 40 data bits and has a duration of 2560 chips. The channelization code set and modulation scheme (labeled as part 1) are encoded using the UE ID and sent on slot 0 of the subframe. The transport block size, HARQ process information, redundancy and constellation

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version, and new data indicator (labeled as part 2) are also encoded using the UE ID and sent on slots 1 and 2 of the subframe; the HS-SCCH spans 2 msec, which is the same as the HS-DSCH. However, the HS-SCCH is transmitted 2 slots prior to the corresponding HS-DSCH. Therefore, if a subframe on the HS-DSCH spans slots  $n$ ,  $n+1$ , and  $n+2$ , then the associated subframe on the corresponding HS-SCCH spans slots  $n-2$ ,  $n-1$ , and  $n$ . ([0049] plus).

It's noted that in a wireless communication system such as a broadband wireless access system defined by IEEE 802.16e technology, mutual information between a subscriber station and a base station is transmitted over a multiple logical channel. According to a transmission direction of data information, the logical channel can be divided into a forward channel transmitted from a base station to a subscriber station, and a reverse channel transmitted from a subscriber station to a base station. It's also noted that the downlink control channel is used to transmit a control signal, which includes control information from the base stations to the mobile station. The downlink control channel includes a downlink common control channel, a downlink shared control channel, and a common pilot channel. In conventional, a forward channel between a subscriber station (SS) and a base station (BS) includes a forward pilot channel (F-PCH), a forward common control channel (F-CCH), and a forward traffic channel (F-TrCH). The forward pilot channel is used for synchronization between the subscriber station and the base station. The forward common control channel is used for transmitting common control information and a network parameter transmitted from the base station to the subscriber station. The common control information includes channel assignment information for reverse and forward channels. Finally, the forward traffic channel is used for transmitting forward traffic information transmitted from the base station to the subscriber station. When a subscriber station

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intends to access a system in a wireless environment, the subscriber station should trace information from a forward pilot channel and complete a synchronization process with a base station on a downlink, which can be performed by capturing. The subscriber station also needs a process of acquiring common control information and a network parameter transmitted over a forward common control channel. The common control information includes channel assignment information for reverse and forward channels as well as parameter information related to each channel, and the subscriber station can initialize an access request in a selected access channel based on the information.

Regarding claims 15-17, Koo further teaches in Fig. 40 wherein the appointed field is a pilot field of the associated control frame. Reference numerals 207 and 209 denote a pilot field and a power control command field of a dedicated physical control channel (DL\_DPCCH) out of a downlink dedicated physical channels (DL\_DPCHs), respectively.

Regarding claim 18, Malladi further teaches in Fig. 2B wherein the number of bits used to specify the HARQ channel ID is 3 bits and number of bits used to specify redundancy version is 3 bits ([0045]-[0046])

Regarding claim 19, Malladi further teaches in the Release 5 of W-CDMA supports high-speed downlink packet access (HSDPA), which is a set of physical channels and procedures defined as part of the UTRAN that enable high-speed transmission of data on the downlink. Data for HSDPA is processed in transport blocks (or packets), each of which spans a time interval referred to as transmission time interval (TTI). The transport blocks are then multiplexed onto the high-speed downlink shared channel (HS-DSCH), which is a downlink

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transport channel that may be shared by multiple UEs. The HS-DSCH is then mapped to a high-speed physical downlink shared channel (HS-PDSCH) ([0035] plus).

Regarding claim 20, in forward packet data control channel (F-PDCCH) used in a conventional CDMA 2000 1xEV-DV system, the outer frame quality indicator is transmitted while preferably being exclusive-ORed by means of a 8-bit specific binary pattern called an medium access control layer identification (MAC\_ID). The MAC\_ID is a unique number used by the base station to recognize a mobile station.

With respect to claims 1-12, they are method claims corresponding to the apparatus claims 13-20 as discussed in paragraph above. Therefore, claims 1-12 are analyzed and rejected as previously discussed with respect to claims 13-20.

One skilled in the art of communications would recognize the need for a novel system and method for efficiently carrying downlink control information for an enhanced uplink dedicated channel, and would apply Malladi's subframe structure for the shared control physical channel for the high-speed downlink shared channel (HS-SCCH) into Koo's novel use of the downlink shared control channel, and a common pilot channel in wireless communications. Therefore, It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to apply Malladi's mitigation of link imbalance in a wireless communication system into Koo's apparatus and method for assigning a common packet channel in a CDMA communication system with the motivation being to provide a system and method for control signaling in wireless communications.



***Conclusion***

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The Ha et al. (US#2004/0223473) is cited to show the apparatus and method for controlling HARQ in a mobile communication system.

The Zhang et al. (US#2004/0085924) is cited to show the method for carrying downlink control information for an enhanced uplink dedicated channel.

The Heo et al. (US#2005/0073985) is cited to show the system and method for controlling a TTI in a W-CDMA communication system supporting enhanced uplink dedicated transport channel.

The Li et al. (US#2006/0245398) is cited to show the method and apparatus for supporting direct link communication in TDD CDMA system.

The Grilli et al. (US#2002/0093922) is cited to show the method and system for performing handoff in wireless communication systems.

The Koo et al. (US#2007/0032255) is cited to show the method for providing multi-level access services in common access channel.

The Chang et al. (US#6,532,225) is cited to show the MAC layer for packetized wireless systems.

The Das et al. (US#7,133,688) is cited to show the method for improving uplink control channel efficiency in a wireless communication system.

The Naim et al. (US#2002/0093953) is cited to show the system for uplink scheduling packet based data traffic in wireless system.

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The Toskala et al. (US#2003/0219037) is cited to show the method and apparatus for distributed signaling for uplink rate control.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to M. Phan whose telephone number is (571) 272-3149. The examiner can normally be reached on Mon - Fri from 6:00 to 3:00.

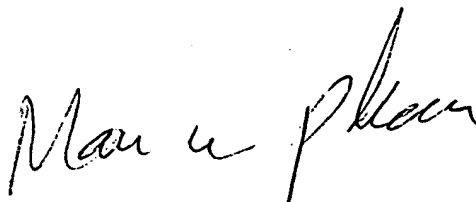
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wellington Chin, can be reached on (571) 272-3134. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-2600.

8. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have any questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at toll free 1-866-217-9197.

Mphan

04/11/2007.



MANU J. PHAN  
PRIMARY EXAMINER